Gotography

/goˈtɒgrəfi/

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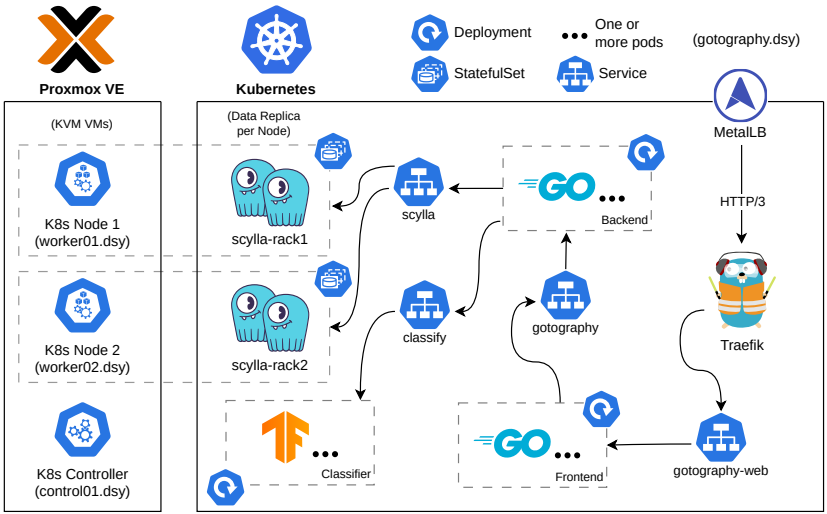
Our Plan

- Web application to share collections of pictures.
- Automatic tagging of images using machine learning.
- It should also satisfy some personal criteria:
  - Privacy friendly (Content control, no third parties)
  - Cloud native (decoupled, containerized, scalable)
  - Fully server-side rendered

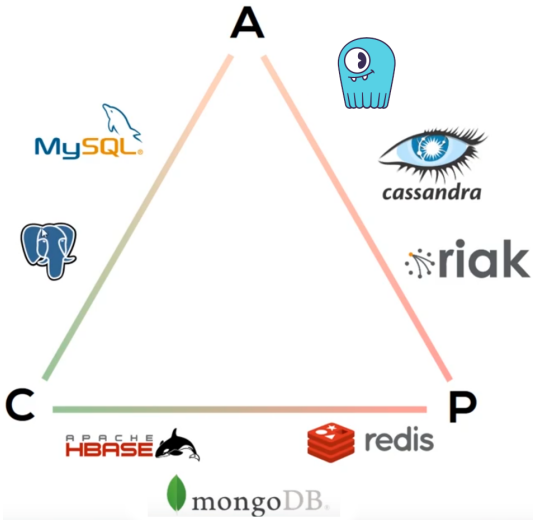
Demo time!


Me trying to
delete a pod
$ kubectl delete pod my-app-6b97-2j
pod
pod
pod
pod
pod
pod
pod
replicas: 12
pod
pod
pod
deploy

Architecture



ReCAP



CQL Databases

At the price of ...

- No JOINs (unpredictable behavior)
- De-normalization due to wide-column data model
- No untargeted bulk statements (DELETE * FROM table;)

...but for the ability to scale!

Cassandra vs ScyllaDB

Initial reason: Performance issues

- Before: 650 MiB (idle)
- After: 150 MiB

Cassandra vs ScyllaDB

ScyllaDB Provides Superior Performance with Less Administration, all at Lower Cost

ScyllaDB is an increasingly popular alternative NoSQL database to Apache Cassandra. Imagine all the goodness of Cassandra — same highly available ring architecture, same SSTable data format, same Apache Cassandra Query Language (CQL) — but without the Java overhead.

Backend

Purpose:

- Expose REST API for frontend
- Communication with database
- Requests to image classifier

Details:

- Go, Gin, GoCQL
- JWT (JSON Web Tokens)
- Authorizer (Different scopes)

Classifier

Purpose:

- Return tags for images transmitted via HTTP

Details:

- TensorFlow (PhotoPrism NASNet)
- Google's Distroless CC container image (libgcc1)
- 72 MiB (including model and libraries)

Frontend

Purpose:

- Template rendering using Go's *html/template* package

Details:

- QR code rendering (TOTP with SHA-256)
- Browser cookie management

Lessons Learned

„Fit the database you are using to your requirements (using the CAP theorem)“

„Server-side rendering is hard“

„Moving state from an application to the user is great“